

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

**(19) World Intellectual Property
Organization
International Bureau**



(43) International Publication Date
29 January 2004 (29.01.2004)

PCT

(10) International Publication Number
WO 2004/010595 A1

(51) International Patent Classification⁷: H04B 1/04

Philips Intellectual Property & Standards GmbH, Weiss-
shausstr. 2, 52066 Aachen (DE). **PURR, Thomas**
[DE/DE]; Philips Intellectual Property & Standards
GmbH, Weissshausstr. 2, 52066 Aachen (DE).

(21) International Application Number:
PCT/IB2003/003175

(22) International Filing Date: 11 July 2003 (11.07.2003)

(74) Agent: VOLMER, Georg; Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).

(25) Filing Language: English

(26) **Publication Language:** English

(30) Priority Data:
102 33 123.5 20 July 2002 (20.07.2002) DE

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (for DE only): PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH [DE/DE]; Stein-
damm 94, 20099 Hamburg (DE).

(71) **Applicant** (for all designated States except DE, US):
KONINKLIJKE PHILIPS ELECTRONICS N.V.
[NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven
(NL).

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

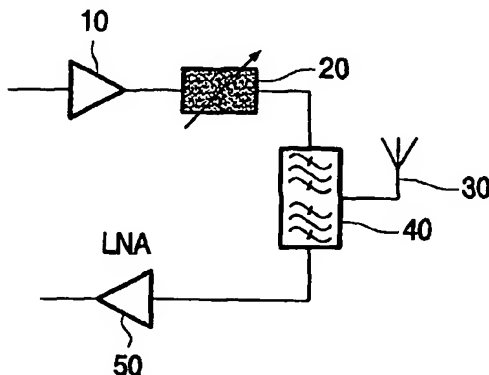
(75) Inventors/Applicants (for US only): PIETIG, Rainer [DE/DE]; Philips Intellectual Property & Standards GmbH, Weissshausstr. 2, 52066 Aachen (DE). **KIEWITT, Rainer** [DE/DE]; Philips Intellectual Property & Standards GmbH, Weissshausstr. 2, 52066 Aachen (DE). **MATTERS-KAMMERER, Marion, Kornelia** [DE/DE];

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DEVICE FOR DYNAMIC IMPEDANCE MATCHING BETWEEN A POWER AMPLIFIER AND AN ANTENNA



(57) Abstract: A device for dynamic impedance matching between a power amplifier and an antenna, having a circulator (210), which routes a signal received from the power amplifier (10) at a first port via a second port to the antenna (30) and diverts the signal reflected at the antenna (30) and received at the second port through a third port; and a controllable matching network (24, 240, 250); is characterized in that a directional coupler (200) diverts a proportion of the signal traveling from the power amplifier (10) to the antenna (30), from which the magnitude and phase of the signal may be derived, to a signal detector (220); and the circulator (210) routes the entire signal reflected at the antenna (30) into the signal detector (220); wherein the signal detector (220) passes the magnitude and phase of both the signal traveling to the antenna (30) and the signal reflected at the antenna (30) to a controller (230), which evaluates the information received from the signal detector (220) in order to determine

the present impedance value of the antenna (30) and to correct the controllable matching network (24, 240, 250) having active and passive components in accordance with the determined impedance value of the antenna (30).

WO 2004/010595 A1